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FOREST MANAGEMENT

ANNUAL FOREST INSECT STATUS REPORT
SEASON 1936

To Officers in Charge of Organizations:

It is requested that this report be circularized through that portion of your organization interested in forest protection.

James C. Evenden
Entomologist

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Coeur d'Alene, Idaho
March 2, 1937

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INTRODUCTION

This summary of forest insect conditions within Region 1 has been prepared from the Annual Insect Status Reports of the Forest Service and the National Park Service. It is prepared each year for the purpose of presenting the information which it contains to all interested forest-managing agencies. As the data submitted are of a necessity in rather meager detail, additional information concerning any of the situations mentioned will be gladly furnished.

In the submission of these data there are still a number of the old "Report on Insect Conditions" (Form 96 R-1) being used. It is desirable that the new form (96 R-1 revised March 1936) be secured and used. The new form is considered as being superior to the old, as there are no conventional "yes" and "no" questions which often fail to depict existing conditions. This form carries a large space for remarks, which is intended for the reporting officer's reaction to the status of the outbreak or infestation being considered. His remarks are intended to give a complete picture of the infestation and include such items as the source of the infestation, direction of spread, number of trees attacked, percent of stand killed, increasing or decreasing, etc. Though many officers have submitted splendid depictions, others have neglected this phase of their report. This requirement should be kept in mind by the reporting officer, as these data are invaluable to the proper analysis of given situations.

There seems to be some danger that the importance of so-called normal or endemic infestations may be minimized, and that observers may be prone to consider reported infestations as belonging to that category, when a more thorough examination might reveal a more serious condition. Furthermore, one must not forget that innocent-appearing infestations are potential epidemics, and in many instances the change takes place so quickly that unless proper examinations are made, serious epidemics may exist before the danger is recognized. If proper examinations or surveys are to be made of forested areas, they must be considered as special projects, and not made in conjunction with other forestry operations.

TABLE I
SUMMARY OF FOREST RANGER REPORTS

	1934	1935	1936
Number of Forests Reporting*	15	16	16
Number of Ranger Districts Reporting	90	91	84
Number of Insect Infestations Reported	141	183	134
Number of Reports Depicting No Infestations	17	9	14
Number of Secondary Insects Reported	14	30	18
Number of Dendroctonus Reports	101	144	107
Number of Fir Engraver Beetle Reports	2	1	1
Number of Spruce Budworm Reports	7	7	5
Increasing Infestations	30	43	6
Decreasing Infestations	70	111	93
Normal Infestations	24	20	13
Infestations Reported as no Longer Existing	--	8	9
Status of Infestation Uncertain			13

* As the Coeur d'Alene Forest was covered by an extensive survey, no ranger reports were submitted.

TABLE II
REPORT OF MISCELLANEOUS SECONDARY INSECTS
(I--Increasing, D--Decreasing, N--Normal)

Cabinet National Forest -	Spruce Gall Aphis (Adelges cooleyi)	D
	Douglas Fir Cone Moth (Zeiraphera diniana?)	D
	Pine Butterfly (Neophasia menapia)	D
	White Pine Aphis (Pineus pinifoliae)	D
	Pine Leaf Scale (Chionaspis pinifoliae)	N
	Spider Mite - White Pine (Oligonychus amer.)	D
	Oregon Engraver (Ips oregoni)	D
	Ips - White Pine (Ips sp.)	D
	Aphis - Ponderosa Pine, White Pine	D
	Aphis - Lodgepole, Ponderosa	D
Flathead National Forest -	Larch Sawfly (Nematus erichsonii)	D
	" " " "	D
	Aphis - White Pine	D
Custer National Forest -	Aspen Borer	D
	Tip Moth (Rhyacionia sp.?)	I
	Caterpillars (Ash)	?
	Grasshoppers	?
	Spruce Budworm	N

TABLE III
SUMMARY OF INSECT INFESTATIONS REPORTED
(NATIONAL FORESTS)

Insect	Year	Inc.	Dec.	Normal	Dropped	Total
Mountain Pine Beetle D. monticolae Hopk.	1936	5	65	*11	8	89
	1935	24	79	8	6	117
	1934	17	52	8	0	77
	1933	33	45	17	0	95
	1932	64	20	12	0	96
	1931	51	27	14	0	92
	1930	60	24	14	0	98
	1929	45	14	23	0	82
	1928	33	13	10	0	56
Western Pine Beetle D. brevicomis Lec.	1936	0	3	3	0	6
	1935	1	6	1	1	9
	1934	1	5	4	0	10
	1933	5	2	1	0	8
	1932	2	2	0	0	4
	1931	2	1	1	0	4
	1930	4	1	0	0	5
	1929	0	3	4	0	7
	1928	5	4	2	0	11
Douglas Fir Beetle D. pseudotsugae Hopk.	1936	0	9	3	0	12
	1935	2	10	3	0	15
	1934	3	8	3	0	14
	1933	5	4	5	0	14
	1932	13	1	5	0	19
	1931	2	5	1	0	8
	1930	4	2	4	0	10
	1929	2	1	2	0	5
	1928	5	4	2	0	11
True Fir Beetle Scolytus ventralis Lec.	1936	0	1	0	0	1
	1935	1	0	0	0	1
	1934	0	1	1	0	2
	1933	4	0	0	0	4
	1932	5	0	0	0	5
	1931	0	0	1	0	1
	1930	2	0	0	0	2
	1929	1	0	0	0	1
	1928	0	0	1	0	1

* The status of seven of these infestations was uncertain.

TABLE III (CONT.)
SUMMARY OF INSECT INFESTATIONS REPORTED
(NATIONAL FORESTS)

Insect	Year	Inc.	Dec.	Normal	Dropped	Total
	1936	0	2	*2	1	5
	1935	1	3	2	1	7
	1934	3	4	0	0	7
	1933	3	4	4	0	11
Spruce Budworm	1932	3	7	1	0	11
Cacoecia fumiferana	1931	1	7	1	0	9
Clem.	1930	6	5	6	0	17
	1929	4	9	3	0	16
	1928	11	12	4	0	27

* The status of one of these infestations was uncertain.

The outstanding change in the above tabulation for 1936 is the decrease in the number of mountain pine beetle infestations, which is due to the dropping of previously reported situations. Though follow-up reports were requested of all situations reported in 1935, it is evident that this was not complied with in all instances.

MOUNTAIN PINE BEETLE INFESTATIONS
WHITE PINE

The following table presents a statistical comparison of the number of mountain pine beetle infestations in white pine for the seasons of 1935 and 1936.

TABLE IV

Forest	No. of reports		Number of Infestations							
			Increasing		Decreasing		Normal		Stopped	
	1935	1936	1935	1936	1935	1936	1935	1936	1935	1936
Cabinet	4	4	0	0	4	4	0	0	0	0
Clearwater	1	1	0	0	1	1	0	0	0	0
Flathead	1	0	0	0	1	0	0	0	0	0
Nezperce	1	0	0	0	1	0	0	0	0	0
Pend Oreille) Kaniksu)	6	4	0	2	2	2	2	0	2	0
Kootenai	6	2	2	0	4	2	0	0	0	0
St. Joe	5	2	3	0	1	0	0	2	1	0
Total	24	13	5	2	14	9	2	2	3	0

The preceding tabulation would seem to indicate that there has been a marked decline in the number and severity of mountain pine beetle infestations in white pine. However, not all of the situations recorded in 1935 were covered with follow-up reports during the past season. Though such a follow-up would have increased the number of reports, it is doubted if there would have been any great change in the status of conditions, for it is believed that in most of the white pine areas there has been a rather marked reduction in the severity of the mountain pine beetle infestation.

The Cabinet Forest reports four infestations (Elk Creek, Twelve Mile, Mullan Gulch, and Cole Creek), three of which were recorded in 1935. The Cole Creek situation was reported in 1934, dropped in 1935, and recorded again in 1936. An infestation on Big Creek was reported in 1935, but was not mentioned this season.

One report was submitted from the Clearwater National Forest which covered practically the entire Canyon Ranger District. This report included such areas as Sheep Mt., Deadhorse, Sheep Mt. Creek, Skull Cr., Isabella Creek, Wallow Mt., Salmon Creek, Tepee Creek, Sneak Creek, River Canyon, mouth of Thompson Creek, and Sheep Creek. Of these twelve units the first six were reported in 1935. The infestation within these areas is not considered as being serious by the reporting officer, though in some instances it is not entirely clear if the insect is attacking lodgepole pine or white pine. If white pine, it is possible that some of the situations may be more serious than anticipated.

Though both the Flathead and Nezperce reported one infestation in 1935, none were recorded from these forests in 1936.

The Kaniksu records four infestations as against six in 1935. These reports include Pass Creek, Stoney Creek, Smith Creek, and Big Lightning Creek. The Smith Creek and Big Lightning Creek infestations are recorded for the first time and are considered as potentially serious situations. A thorough survey will be made of these areas during the 1937 season.

Only two reports were received from the Kootenai, though six were listed for 1936. The infestation in these two areas, Cabinet and Upper Ford Districts, are not considered as dangerous.

Though five reports were received from the St. Joe in 1935, only two were recorded for the past season. These two reports include rather large areas in the Avery and Roundtop Ranger Districts, where the infestation seems to be increasing and of sufficient severity to warrant an intensive survey during the coming season.

TABLE V

MOUNTAIN PINE BEETLE IN LODGEPOLE PINE

Forest	No. of reports		Number of Infestations							
			Increasing		Decreasing		Normal		Stopped	
	1935-1936		1935-1936		1935-1936		1935-1936		1935-1936	
Absaroka	2	0	1	0	1	0	0	0	0	0
Beaverhead	8	7	3	1	5	6	0	0	0	0
Bitterroot	6	4	0	0	4	3	1	0	1	1
Cabinet	5	5	0	0	5	5	0	0	0	0
Clearwater	2	1	0	0	2	1	0	0	0	0
Custer	1	0	●	0	0	0	1	0	0	0
Deerlodge	6	6	0	0	6	6	0	0	0	0
Flathead	3	2	0	0	3	1	0	1	0	0
Gallatin	5	5	1	0	2	5	2	0	0	0
Helena	5	4	1	0	4	4	0	0	0	0
Kootenai	3	1	1	0	2	1	●	0	0	0
Lolo	8	6	1	0	7	3	0	0	0	3
Nezperce	6	3	1	0	5	2	0	1	0	0
St. Joe	3	2	3	0	0	0	0	0	0	2
Total	63	46	12	1	46	37	4	2	1	6

The preceding tabulation indicates a reduction in the number and severity of mountain pine beetle infestation in lodgepole pine. Though possibly the severity of some of the situations reported has been minimized, it is true that in such areas as the Beaverhead, Bitterroot, Clearwater, Nezperce, and perhaps others, the infestation is decreasing in severity, due primarily to the lack of host material. In some areas, especially portions of the Beaverhead, a severe mortality in the overwintering broods of the mountain pine beetle followed the occurrence of low temperatures during the past winter.

TABLE VI
MOUNTAIN PINE BEETLE INFESTATION
WHITEBARK PINE, LIMBER PINE, PONDEROSA PINE

Forest	Increasing		Decreasing		Normal		Stopped	
	1935-1936		1935-1936		1935-1936		1935-1936	
Whitebark Pine								
Absaroka	2	0	0	1	0	1	0	0
Beaverhead	0	0	0	2	0	0	0	0
Bitterroot	0	0	2	1	0	1	1	1
Deerlodge	1	0	1	2	0	0	0	0
Gallatin	1	0	0	3	1	0	0	0
Lolo	0	0	1	0	0	0	0	0
Nezperce	0	0	1	1	0	0	0	0
St. Joe	2	0	0	0	0	0	0	0
Limber Pine								
Absaroka	1	0	0	0	0	0	0	0
Beaverhead	2	0	1	2	0	0	0	0
Deerlodge	0	0	0	1	0	0	0	0
Ponderosa Pine								
Bitterroot	0	1	4	2	1	0	1	1
Cabinet	0	0	1	1	0	0	0	0
Custer	0	0	1	0	0	0	0	0
Deerlodge	0	0	1	0	0	0	0	0
Lolo	0	0	3	0	0	0	0	0
St. Joe	1	0	3	0	0	0	0	0
Nezperce	0	0	0	1	0	0	0	0

An infestation of the mountain pine beetle exists in nearly all whitebark pine areas. Though the infestations are not reported as increasing, it is apparent that there has been but little if any reduction in their severity, and that an additional spread into new uninfested areas has occurred. The Absaroka reports that though the infestation is spreading at a slower rate than in the past, clumps of red-tops are showing each year in previously uninfested areas. The Supervisor believes that even with this reduction all whitebark pine trees above 4" will be killed.

An infestation in limber pine was again reported from the Beaverhead and one new outbreak from the Deerlodge.

Wherever ponderosa pine occurs in association with or closely adjacent to an area of infested lodgepole pine, there is always considerable loss of this more valuable tree species. Usually, however, such losses do not occur until the outbreak in lodgepole pine has reached a severe epidemic stage, and then only continues as long as the lodgepole epidemic exists.

TABLE VII
WESTERN PINE BEETLE INFESTATION
PONDEROSA PINE

Forest	No. of reports		Number of Infestations							
			Increasing		Decreasing		Normal		Stopped	
	1935	1936	1935	1936	1935	1936	1935	1936	1935	1936
Cabinet	2	1	0	1	2	0	0	0	0	0
Kootenai	3	1	1	0	1	0	1	1	0	0
Lewis & Clark	1	1	0	0	0	0	0	1	1	0
Lolo	1	0	0	0	1	0	0	0	0	0
Nezperce	2	3	0	0	2	2	0	1	0	0
Total	9	6	1	1	6	2	1	3	1	0

Though the number of reports of western pine beetle infestations received for the 1936 season were less than for the previous year, it is doubted if there has been any marked reduction in the status of the situations reported. The Nezperce reports one new infestation which is considered as decreasing in severity. However, it is recommended that western pine beetle infestations be kept under careful observation during the next few years.

TABLE VIII
DOUGLAS FIR BEETLE INFESTATION
DOUGLAS FIR

Forest	No. of reports		Number of Infestations							
			Increasing		Decreasing		Normal		Stopped	
	1935	1936	1935	1936	1935	1936	1935	1936	1935	1936
Absaroka	2	1	0	0	1	0	1	1	0	0
Cabinet	2	1	0	0	2	1	0	0	0	0
Flathead	7	5	0	0	6	5	1	0	0	0
Gallatin	1	1	0	0	0	1	1	0	0	0
Helena	1	1	0	0	1	0	0	1	0	0
Kootenai	2	2	2	0	0	1	0	1	0	0
Lolo	0	1	0	0	0	1	0	0	0	0
Total	15	12	2	0	10	9	3	3	0	0

This season reports indicate a slight change in the status of the Douglas fir beetle infestations within the region. During the past decade this insect has been responsible for considerable destruction of Douglas fir within the Northern Rocky Mountains. These losses have varied from a fairly large percent of the timber within the infested area to small, scattered spots of dead trees. This season none of the nine infestations reported were considered as serious.

SPRUCE BUDWORM INFESTATION

Five spruce budworm infestations were recorded as follows: Absaroka (1), Bitterroot (1), Helena (1), and Nezperce (2). None of these infestations were considered as increasing, and it is apparent that there has been a gradual but constant decline in the severity of the budworm epidemic throughout the district. In 1928 infestations of this insect were reported as covering 789,000 acres of timber.

LARCH SAWFLY (NEMATUS ERICHSONII)

The first report of this insect from the western United States was received from the Flathead National Forest in 1934. At the present time a few small spots of infestation are known to exist along the north fork of the Flathead River, though it is believed that there was a marked reduction in the severity of the 1936 defoliation as compared to the previous season.

Two areas of dying larch previously reported from the Kootenai were examined during the 1936 season. Though the exact cause of death was undetermined, no evidence of larch sawfly defoliation could be found.

MISCELLANEOUS INSECTS

Of the secondary insects reported as destructive to forest growth, there are only a few which occupy positions of economic importance. Large quantities of alpine fir are destroyed annually by the alpine fir beetle (Dryocoetes confusus). Ips oregoni continues to appear in sporadic outbreaks throughout ponderosa pine reproduction. The fir engraver (Scolytus ventralis) continues to destroy large quantities of white fir. Cone and seed insects destroy a large percent of the seed crops of forest trees, and some damage follows the attacks of the white pine aphid, spruce gall aphid, etc.

GLACIER NATIONAL PARK, SEASON 1936

The Annual Insect Report of the Glacier National Park, submitted by John F. Aiton, Ranger Forester, indicates a satisfactory forest insect situation throughout the park. Mr. Aiton's report is based upon an insect survey of the entire park during September and October. The following statement is quoted from his report:

"An insect survey, covering the entire park, was conducted by Forestry Foremen Campbell and Lane, and the park ranger force.

"The results of this year's survey show a marked decrease from the number of infested trees reported last year. There is a possibility that the unusually cold weather prevalent in Glacier Park during the past winter resulted in setting back the activities of the Douglas fir beetle and the mountain pine beetle to a relatively normal state. The sharp decrease in activity of the insects in areas of Douglas fir, greatly weakened by fungus, further substantiates the fact that some major disturbance such as continued low temperatures wrought great havoc among the bark beetles."

On the western side of the park the mountain pine beetle infestation in lodgepole pine and white pine is apparently decreasing very rapidly in severity. Though this area was thoroughly covered by the survey, only a few new attacks were recorded, which were in the Fish Creek District.

On both the east and west sides of the park Mr. Aiton reports a few scattered attacks of the Douglas fir beetle, but no alarming situations. It is gratifying to note that the control measures instituted in 1934 against an outbreak of this insect at St. Mary's Lake have proved so successful, with no further damage occurring.

Conditions following the Swiftcurrent Valley fire, which occurred late in the 1936 season, may result in a serious situation during the next few years. Throughout the burned area and around the edges of the fire there are large numbers of severely scorched Douglas fir trees. These trees will no doubt attract attacks of the Douglas fir beetle during the coming season. If this occurs--and our experience has led us to believe it will--the problem of preventing the insects from spreading to healthy Douglas fir stands adjacent will be a difficult one. The possibility of this occurrence will be checked very carefully during the next few years.

YELLOWSTONE NATIONAL PARK

The Annual Insect Report of the Yellowstone National Park prepared by George A. Walker, Acting Ranger Forester, presents a clear depiction of forest insect conditions. Due to the character of the mountain pine beetle infestations, a general survey of the park was considered unnecessary except around the areas of more intensive use. The following quotation is from Mr. Walker's report:

"The Mountain Pine Beetle continues to be the most important forest insect as far as damage to the forests of Yellowstone Park. While no definite surveys have been made to determine the spread of this beetle, from observations that have been made in various sections of the park, the infestation is spreading. The infestation has hit

the Whitebark and Lodgepole pines rather heavily in the higher elevations throughout the park. Perhaps the most evident increase of the infestation is along the Dunraven Pass road, where the beetle has heavily infested both the Whitebark and Lodgepole pines. In the Mt. Sepulcher area there has been a most decided increase and spread in the past year of the infestation. Practically all the Whitebark pine in this area is doomed unless some unforeseen happening takes place and destroys the beetles. Several new attacks were noted in the Lodgepole pine in this area. A year ago there were no evidences of attacks on Lodgepole pine in this area.

"The infestation of Mountain Pine Beetle is of such magnitude in Yellowstone Park, that it is out of the question to attempt control measures on a large scale. Control measures in populated areas and in areas where the trees have a high esthetic value will continue to be carried on.

"Control projects were completed at Mammoth and Old Faithful in May and early June. In the Mammoth area 43 trees infested with Mountain Pine Beetle were treated. This was a reduction of 25 trees treated in this area a year ago, when a total of 68 trees were treated. All the trees treated in the Mammoth project were limber pine.

"The control project at Old Faithful was the first attempt made for insect control in this area. In the Old Faithful area 112 trees were treated. Of this number, 19 were infested with Mountain Pine Beetle and 93 were infested with Ips. After stripping the area out, it was felt that the Ips infested trees might as well be removed along with the Mountain Pine Beetle trees. From previous surveys using a 10% coverage, it was estimated there were more Mountain Pine Beetle infested trees in this area than were actually found. The infested trees treated in this area were all Lodgepole pine."

A problem which assumes rather serious proportions in the Yellowstone Park is the dying of lodgepole pine around the formations and within the camp grounds, etc. The following paragraph is quoted from Mr. Walker's report:

"Ips infestations have increased during the past year along roads and in heavily utilized areas. The Bureau of Entomology recommends no control projects unless there is a desire of the National Park Service to clean up along roads and in utility areas. It is anticipated to carry on control of Ips with Mountain Pine Beetle control in populated areas. In the Old Faithful area 93 Ips infested trees were removed during the Mountain Pine Beetle control project in that area. Control along highways is costly as it is necessary to completely obliterate the removal of the trees."

This condition presents a serious problem, for though a large percent of these trees are infested with different species of beetles (Dendroctonus monticolae, Ips oregoni, Pityogenes knechteli), their attacks can not be considered as being primary. The trees are growing under very adverse conditions as a result of poor soil conditions around geyser formations and the physical injury which they endure in areas of excessive use. These adverse conditions assure their ultimate death.

Early in July a rather severe outbreak of the garden webworm (Loxostege similalis) appeared at the game ranch and forest nursery areas. However, owing to the precautionary measures taken by park officials no damage occurred.

Among the miscellaneous insects mentioned by Mr. Walker as being present in the park, some fear was expressed relative to a recurrence of the sawfly and needle tyer damage at West Yellowstone. An examination will be made of this area in time to institute control if considered necessary.

FIELD SEASON 1936

Cabinet National Forest

White pine logs left during road construction in the Twelve Mile Creek drainage were found to be infested with the mountain pine beetle and were treated in June 1935. A subsequent survey in September of that year showed a scattered infestation of this insect throughout the drainage, and plans were formulated for the institution of control in June 1936. However, as it was found that such a large percent of the overwintering broods had been destroyed by the low temperatures of the preceding winter, the plans for the institution of control were discontinued. An intensive survey of this area in August 1936 supported the soundness of the action taken.

Coeur d'Alene National Forest

The annual insect survey of the white pine stands of the Coeur d'Alene National Forest shows the mountain pine beetle infestation to have been reduced to a point where no control measures are considered necessary. The Coeur d'Alene bark beetle control project, which was instituted in 1930 and protected by maintenance control through subsequent years, has succeeded in preventing a potentially serious epidemic from developing, and preserved a large percent of the merchantable white pine stands of the forest from destruction. This project is considered as being economically successful, as well as demonstrating the effectiveness of large-scale bark beetle control operations.

Kootenai National Forest Control

Control measures were instituted against an infestation of the mountain pine beetle in the white pine stands of the north fork of Meadow Creek, which were successful in reducing the infestation to a normal status. A survey of the forest did not reveal any infestations of sufficient seriousness to warrant the institution of control.

Shoshone National Forest (Region 4)

The sixth year of control against an outbreak of the Douglas fir beetle in the Douglas fir stands of the Cody Canyon, Shoshone National Forest, was instituted in September and will continue through the present winter. This infestation is in timber stands that have been, and in some areas are still being, seriously injured by spruce budworm defoliation. This project has as its objective the protection of the scenic forests around the many resorts of this area and along the highway leading to the popular east entrance of the Yellowstone Park, which has been successfully accomplished.

Blackfeet Indian Reservation

Control measures were instituted in May 1935 to combat an outbreak of the Douglas fir beetle in the Douglas fir stands along the Hudson Bay Divide of the Blackfeet Indian Reservation. Though this project was successful in reducing the severity of the infestation, there were sufficient trees attacked during the summer to warrant the institution of a clean-up project in the spring of 1936. However, an early examination of this infestation revealed such a high percent of mortality in the overwintering broods that plans for the project were discontinued.

CONCLUSIONS

It is desired to again emphasize the importance of regarding all so-called normal infestations as potential epidemics. When such situations are encountered, or when epidemics have been reduced to a normal status through the institution of control, the area should be kept under surveillance in order to detect the first indication of the existence of a more serious condition.

All reported situations should be followed each year with subsequent reports. When a situation no longer warrants consideration, a final report stating the conditions should be submitted.

Respectfully submitted,

James C. Evenden
Entomologist

Approved,

Elers Koch
Chief of Management